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PATENT SPECIFICATION**856,192**

DRAWINGS ATTACHED.

Inventor:—JAMES HILL.*Date of filing Complete Specification : Aug. 31, 1959.**Application Date : Sept. 5, 1958. No. 28506/58.**Complete Specification Published : Dec. 14, 1960.*

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International Classification :—B31f. B44b.

COMPLETE SPECIFICATION.**Improvements in or relating to Machines for Perforating, Slitting, Creasing, and like Operations on Paper or the like.**

We, ROLLEM PATENT PRODUCTS LIMITED, a British Company, of The Common, Ecclesfield, near Sheffield, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to machines for perforating, slitting, creasing, and like operations on a sheet or sheets of paper or the like, of the type comprising a bed to receive the sheet or sheets, a hardened strip lengthwise of the bed, a perforating or like wheel mounted in a carrier that is movable along a round rod mounted in the lengthwise direction of the strip and capable of pivoting about the axis of the rod, the wheel axis projecting away from the rod so as to enable the wheel edge to be brought into contact with the strip and pressed into operative contact with a sheet or sheets laid on the bed by the hand of the operator used to move the carrier to cause the wheel to roll along the strip.

Pressure on the carrier brings the wheel edge on to one or more sheets laid on the bed over the strip, and is maintained to a degree in accordance with the particularly operation, number of sheets, and character of the sheet material as the carrier is caused to move along the rod.

The object of the present invention is to provide for automatic clamping of the paper or the like close to the line of the perforation or the like.

According to the present invention a machine of the type defined is provided with a clamping bar mounted lengthwise of the strip, and spring-urged clear of it, to be

engaged by the carrier when the latter is pressed to rock it about the axis of the round rod to urge the wheel into operative position and carry it along the sheet or sheets, so that clamping is effected solely by operation of the carrier, with automatic release of the sheet or sheets when the pressure is removed from the carrier on completion of the operation.

The engagement of the clamping bar by the carrier is conveniently by means of a roller coaxial with the wheel, but rotatable independently of the wheel, so that the roller and the wheel each roll freely along the bar and the sheet or sheets respectively.

One or more adjustable stops may be provided on the rod along which the carrier slides, so as to produce an operating stroke of the wheel of predetermined length, e.g. with respect to a raised edge on the bed transverse to the strip, against which edge one edge of a sheet laid on the bed may be located. One or more stops adjustable transversely to the strip may be provided for location of an adjacent edge of a sheet.

One embodiment of the invention will now be described in greater detail with reference to the accompanying drawings, in which:—

Figure 1 is a plan of a complete machine;

Figure 2 is a front elevation;

Figure 3 is a section on the line 3—3 of Figure 2; and

Figure 4 is a section on the line 4—4 of Figure 2.

The bed of the machine consists of two main sections 1, 2 of thick plywood, separated by a slot 3 into which fits, flush with the surface of the sections, a length of square-section strip 4 of hardened file steel

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The strip rests loosely in the slot, so that it can be lifted and turned to bring any one of its faces uppermost to act as the hardened strip. The base of the slot 3 is formed by the edge of a metal bar 5 lying between battens 6 to which the approaching edges of the sections 1, 2 are secured, similar parallel battens 7 (one only shown, Figure 2) being secured to the other edges of the sections. The ends of the bar 5 are secured to brackets 8 (see particularly Figure 3) attached to each end of the sections, with an upstanding support 9 of each bracket lying to one side of the slot 3 and the supports having aligned holes into which are secured the ends of a stiff round rod 10 lying clear above the section 1 to that side of the slot.

Between the supported ends of rod 10, a carrier 11 is mounted on the rod, the carrier having two spaced lugs 12 making a sliding fit with the rod. From the body of the carrier between the lugs 12 projects at right-angles to the rod 10 a spindle 13 provided with an independently rotatable roller 14, and, beyond the roller, a perforating or other wheel 15 fitted with a ball-bearing so as to rotate independently of both the roller 14 and the spindle 13. A shroud 16 integral with the carrier 11 encloses the top and sides of the wheel 15, the bottom of the wheel resting above the hardened strip 4 when the spindle 13 is brought to a horizontal position over the slot 3. At right-angles to the spindle 13, and projecting vertically in this horizontal position of the spindle is a stem 17 to which a handle 18 is secured, the handle lying parallel to the rod 10.

Alongside the slot 3, a clamping bar 19 is supported by leaf springs 20 at its ends, the springs being secured to the section 1, serving to urge the bar clear of the surface of the section. The bar 19 is engaged by the roller 14 on the spindle 13 when the latter is horizontal. At intervals along the underside of the bar 19, short lengths 21 of rubber project from holes in the bar.

Near one end of the section 1, a wooden strip 22 is secured transversely to provide a raised edge 23 for location of one edge of sheets indicated at A, laid on the sections. The section 2 has two transverse slots 24, opening as a T-slot 25 through one of the battens 7, each for an adjustable stop 26 for an adjacent edge of the sheets A. Collars 27 adjustable along the round rod 10 enable the stroke of the carrier 11 and wheel 15 to be adjusted.

The carrier 11 and the brackets 8 may be die-cast, preferably with inserted bushes to fit the round rod 10 without machining. The stem 17 for the handle 18 may likewise be an insert. The supports 9 of the brackets 8 are tapped for set-screws 28 to secure the ends of the rod 10, and the collars 27, which

may also be die-cast and provided with inserted bushes, are also tapped for set-screws 29. The adjustable stops 26 may be die-cast, each being in two parts, a lower part 30 with an inserted screw 31 to receive a wing nut 32 and an upper part 33, both parts having a projecting rib to fit the slot 24 along which the stop is adjustable.

With a sheet A, or a number of sheets, located against the edge 23 and the stops 26, while the carrier 11 is moved to the left of Figures 1 and 2, or is swung clockwise (Figure 4) to bring the wheel 15 well clear of the strip 4, pressure on the handle 18 rocks the carrier as indicated by the broken lines B in Figure 4 to cause the roller 14 to urge the bar 19 downwardly so that the rubbers 21 clamp the sheet or sheets close to the strip before the edge of the wheel 15 is brought into operative contact with the sheet or sheets. As the wheel is rolled along the sheet or sheets by propulsion of the carrier 11 by the handle 18 along the rod 10 to effect the desired perforating or the like, in accordance with the form of edge of the wheel, the clamping pressure on the bar 19 continues to be applied by the roller 14. Yet, as soon as the operation has been completed, release of the carrier by the operator allows the springs 20 to lift the bar clear to permit the sheet or sheets to be removed.

Any wheel on the carrier spindle 13 may be interchangeable with another wheel. Thus, a V-edged wheel with transverse slits 100 may be used for perforating; a plain V-edged wheel for slitting; a waved-edged wheel for deckle-edging; and a plain V-edged wheel for creasing in conjunction with a V-groove, either in one face of the hardened strip 4 or in a replacement strip. The wheel 15 is shown (Figure 2) secured to the spindle 13 by a spring clip 34.

WHAT WE CLAIM IS:—

1. A machine of the type defined for effecting perforating, slitting, creasing and like operations on a sheet or sheets of paper, cardboard, and the like provided with a clamping bar mounted lengthwise of the strip, and spring-urged clear of it, to be engaged by the carrier when the latter is pressed to rock it about the axis of the round rod to urge the wheel into operative position, and carry it along the sheet or sheets, so that clamping is effected solely by operation of the carrier, with automatic release of the sheet or sheets when the pressure is removed from the carrier on completion of the operation.

2. A machine as in Claim 1, wherein the clamping bar is engaged by the carrier through a roller coaxial with the wheel but rotatable independently of the wheel, so that the roller and the wheel each roll freely

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along the bar and the sheet or sheets respectively.

3. A machine as in Claim 1 or Claim 2, comprising one or more adjustable stops on the rod along which the carrier slides.

4. A machine as in any of Claims 1 to 3, comprising a raised edge of the bed transverse to the strip, against which edge one edge of a sheet laid on the bed may be located.

5. A machine as in any of Claims 1 to 4, comprising one or more stops adjustable

transversely to the strip for location of an adjacent edge of a sheet.

6. A machine for effecting perforating, slitting, creasing and like operation on a sheet or sheets of paper, cardboard and the like substantially as hereinbefore described with reference to the accompanying drawings.

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PROVISIONAL SPECIFICATION.

Improvements in or relating to Machines for Perforating, Slitting, Creasing, and like Operations on Paper or the like.

We, ROLLEM PATENT PRODUCTS LIMITED, a British Company, of The Common, Ecclesfield, near Sheffield, do hereby declare this invention to be described in the following statement:—

This invention relates to machines for perforating, slitting, creasing, and like operations on paper or the like, its object being to provide a hand-operated machine, readily adaptable to effecting the perforating or other operation on sheets of various sizes, and particularly suitable for dealing with a small quantity of any given size. A further object is to provide a machine in which the pressure requisite for perforating or the like is firmly and surely applied by the operator. Yet another object is to provide for automatic clamping of the paper or the like close to the line of the perforation or the like.

According to the present invention, a machine for effecting perforating and like operations on sheets of paper, cardboard, and the like comprises a bed to receive the sheets, a hardened strip substantially flush with the bed, a perforating or like wheel mounted in a carrier that is movable along a round rod mounted in the lengthwise direction of the strip and capable of pivoting about the axis of the rod, the wheel axis projecting away from the rod so as to enable the wheel edge to be brought into contact with the strip and pressed into operative contact with a sheet laid on the bed by the hand of the operator used to move the carrier to cause the wheel to roll along the strip.

With the carrier swung to bring the wheel edge clear of the strip, one or more sheets may be laid on the bed over the strip, when the carrier may be swung in the reverse direction and forcibly urged about the axis of the rod as it is propelled along the rod, so that any requisite pressure may be readily applied in accordance with the particular

operation, number of sheets, and character of the sheet material.

A clamping bar may be mounted lengthwise of the strip, and spring-urged clear of it, to be engaged by the carrier when the wheel is urged in operative position, so that the carrier presses the bar on to the sheet, and ensures that the sheet is clamped to the bed close alongside the wheel. This prevents displacement of the sheet by the action of the wheel, and is particularly useful when operating on thin sheets. The carrier preferably engages the bar through a roller, which is conveniently coaxial with the wheel, but not secured to it.

One or more adjustable stops may be provided on the rod along which the carrier slides, so as to produce an operating stroke of the wheel of predetermined length, e.g. with respect to a raised edge transverse to the strip, against which edge one edge of a sheet laid on the bed may be located. One or more stops adjustably transversely to the strip may be provided for location of an adjacent edge of a sheet.

One embodiment of the invention will now be described in greater detail:—

The bed consists of two main sections of thick plywood, separated by a slot into which fits, flush with the surface of the sections, a square-section length of hardened file steel, one or more of the faces of which can constitute the hardened strip. The base of the slot may be formed by the edge of a metal bar lying between battens to which the approaching edges of the sections are secured, similar parallel battens being secured to the other edges of the sections. The ends of the bar are secured to brackets attached to each end of the sections, with an upstanding support of each bracket lying to one side of the slot and the supports having aligned holes into which are secured the ends of a stiff round rod lying clear above the section to that side of the rod.

Between the supported ends of the rod, a carrier is mounted on the rod, the carrier having two spaced lugs making a sliding fit with the rod. From the body of the carrier
5 between the lugs projects at right-angles a spindle provided with a roller, and, beyond the roller, a perforating or other wheel fitted with a ball-bearing. A shroud integral with the carrier encloses the top and sides of
10 the wheel, the bottom of the wheel resting on the hardened rod when the spindle is brought to a horizontal position over the slot. At right-angles to the spindle, and projecting vertically in this horizontal position of the spindle is a screw to which a
15 knob is secured.

Alongside the slot, a clamping bar is supported by leaf springs at its ends secured to one of the sections, the bar being engaged
20 by the roller on the spindle when the latter is horizontal. A resilient strip runs along the underside of the rod, this being formed by a rubber tube threaded on a wire secured to the ends of the rod.

25 Near one end of the sections, wooden strips are secured transversely to provide a raised edge for location of one edge of sheets laid on the sections. One section has one or more transverse slots, each for an adjustable stop for an adjacent edge of the sheets.
30 One or more collars adjustable along the round rod enable the stroke of the carrier and wheel to be adjusted.

The carrier and the brackets may be die-cast, preferably with inserted bushes to fit
35 the round rod without machining. The screw for the knob may likewise be an insert. The supports may be tapped for set-screws to secure the ends of the rod, as also the collars, which may also be die-cast and provided
40 with inserted bushes. The adjustable stop or stops may be die-cast, each being in two parts, one with an inserted screw to receive a wing nut, and each part having a projecting rib to fit the slot along which it is
45 adjustable. The outside battens of the sections are notched for the insertion of the lower part of each stop.

Any wheel on the carrier spindle may be interchangeable with another wheel. Thus,
50 a V-edged wheel with transverse slits may be used for perforating; a plain V-edged wheel for slitting; a waved-edged wheel for deckle-edging, and a plain V-edged wheel for creasing in conjunction with a V-groove
55 in one face of the hardened strip. That strip may either be secured in the slot, or simply held by friction, it being removed and turned to exchange of a plain face by a V-grooved
60 face.

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856,192 COMPLETE SPECIFICATION

1 SHEET

This drawing is a reproduction of the Original on a reduced scale.

FIG. 1.

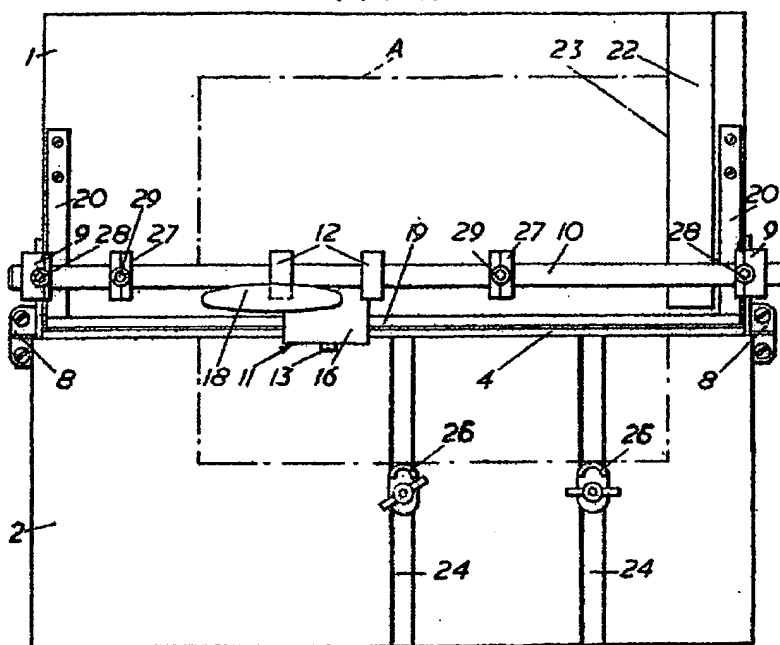


FIG. 2.

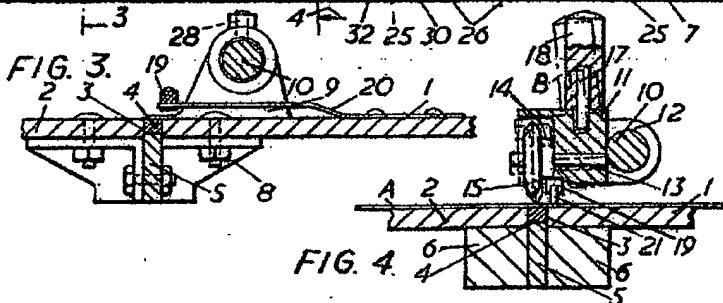
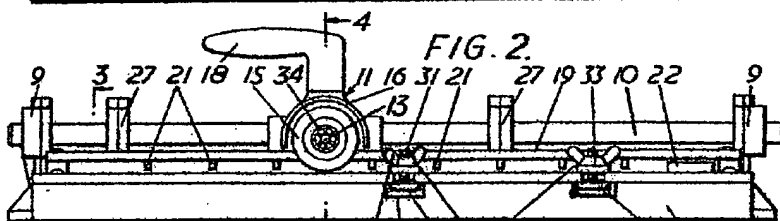
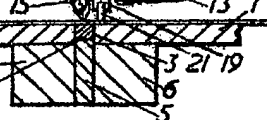


FIG. 4.



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